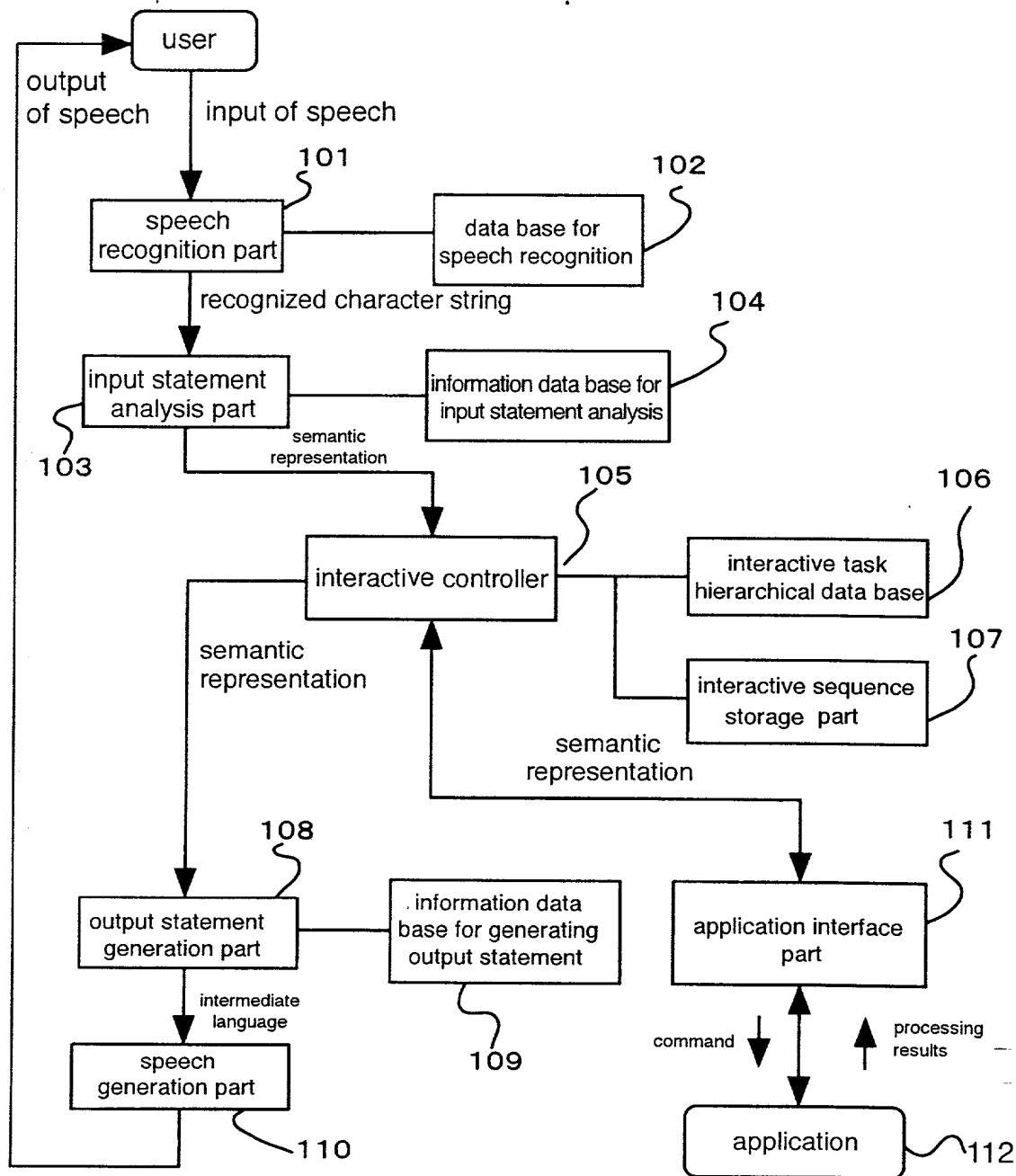
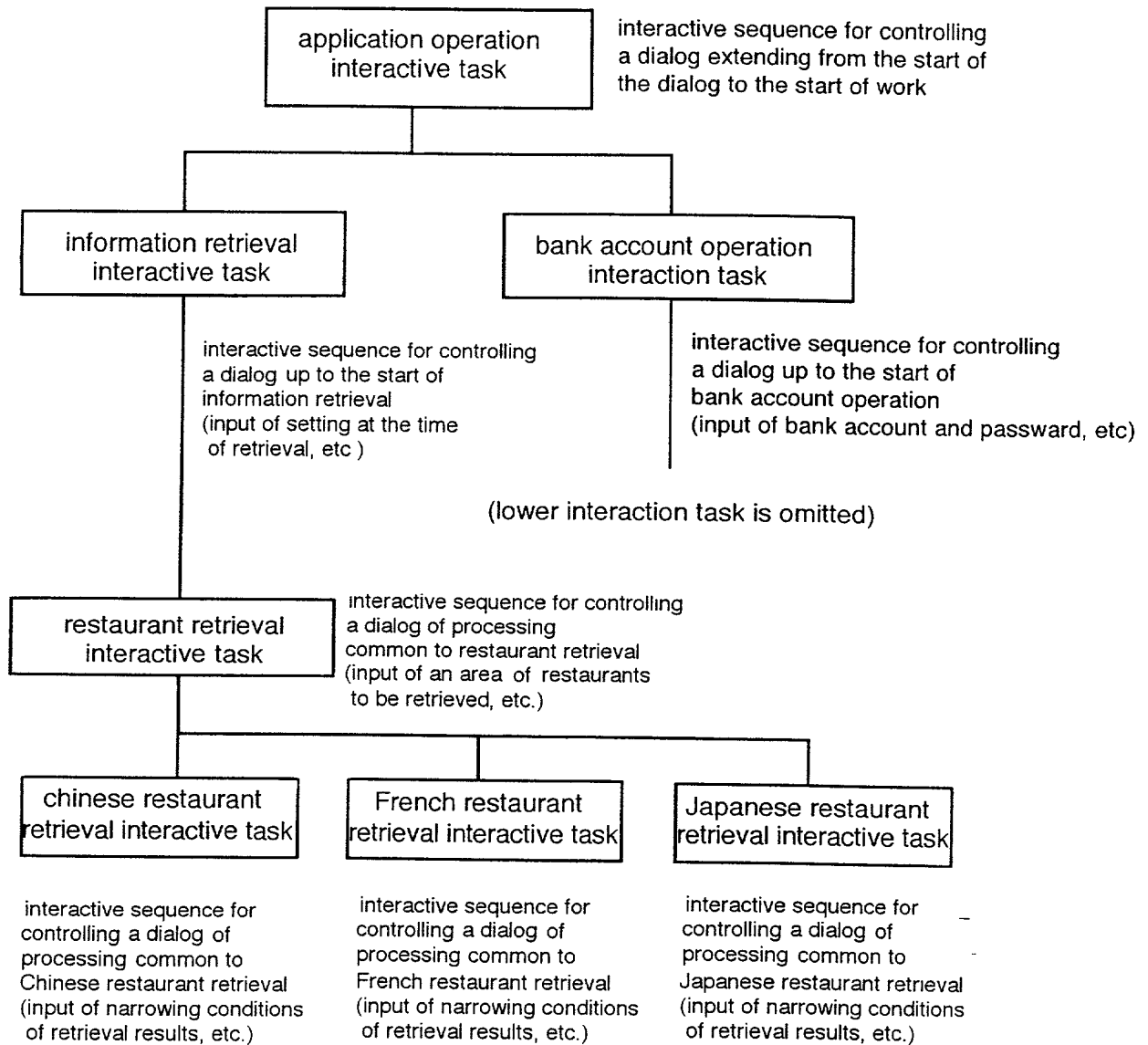


FIG.1



CONFIGURATION OF AN INTERACTIVE SPEECH INTERFACE UNIT
ACCORDING TO A FIRST EMBODIMENT

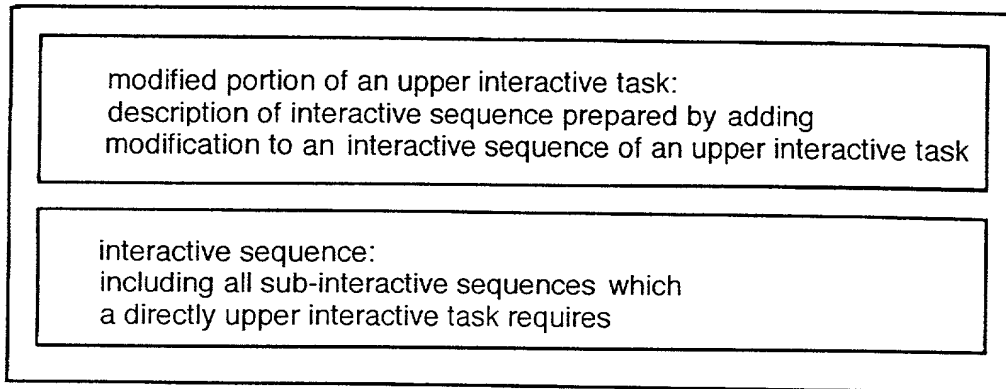
FIG.2



EXAMPLE OF INTERACTIVE TASK HIERARCHICAL DATA BASE

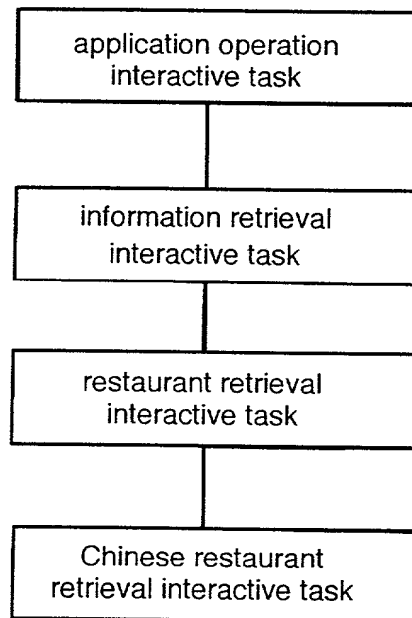
FIG. 3

interactive task



CONFIGURATION OF AN INTERACTIVE TASK

FIG. 4



EXAMPLE OF AN UPPER AND LOWER CHAIN OF
AN INTERACTIVE TASK FETCHED FROM DATA BASE

FIG. 5

interactive sequence name

{

interactive status name: (describe an identifier of an interactive status)

{

interactive procedure:

All sets of "event" "action" "interactive status to be transitive next" which are used in the interactive status in concern are described. For one event, describe not less than one action, one next interactive status.

Event comprises the following (1) to (5).

- (1) input statement from a user (describe in semantic representation)
- (2) results returned from a sub-interactive sequence
- (3) results returned from a calling application
- (4) decision results of various conditions (time out of a response wait from user, etc.)
- (5) no event (in case of unconditionally performing an action and a transition)

Action comprises the following (1) to (4).

- (1) deliver output statement to user (describe in semantic representation) to output statement generation part
- (2) call sub-interactive sequence
- (3) deliver semantic representation for executing an application to an application interface sequence part
- (4) no action (perform only a status transition without doing anything)

}

(description of another interactive status)

}

CONFIGURATION OF AN INTERACTIVE SEQUENCE

FIG. 6

```
interactive sequence name: information retrieval sequence
{
  interactive status name: information retrieval results wait status
  interactive procedure:
  {
    if (event "elapse of 5 seconds from the start of retrieval" occurred){
      action "output of [retrieval is under execution] to a user" is executed;
    }
    if (event "the number of retrieval results is 0" occurred){
      transit to an interactive status "the number of retrieval results being too
small";
    }
    else if (event "the number of retrieval results ranging from 1 to 9" occurred) {
      transit to an interactive status "retrieval results being obtained ";
    }
    else if (event "the number of retrieval results being not less than 10"
occurred) {
      action "the number of retrieval results being too large" is executed;
      if (event [acknowledgement by a user] occurred){
        transit to an interactive status "retrieval results being obtained";
      }
    }
    else{
      transit to an interactive status "retrieval results being obtained";
    }
  }
}
(description of another interactive status)
}
```

EXAMPLE OF AN INTERACTIVE SEQUENCE

FIG. 7

interactive task of interactive task hierarchical data base

information retrieval interactive task

interactive sequence stored in an
interactive sequence storage part

modified portion of an upper interactive task:
application operation interactive sequence{
event / action / next interactive status: PROC_001
}

information retrieval interactive sequence
{
interactive status name: STATUS_101
event / action / next interactive status: PROC_101
interactive status name: STATUS_102
event / action / next interactive status: PROC_102
}

restaurant retrieval
interactive task

modified portion of upper interactive task:
information retrieval interactive sequence
{
interactive status name: STATUS_101
event/action/next interactive status: PROC_103
}

interactive sequence:
restaurant retrieval interactive sequence
{
interactive status name: STATUS_201
event / action / next interactive status: PROC_201
interactive status name: STATUS_202
event / action / next interactive status: PROC_202
}

application operation interactive sequence
{
interactive status name: initial status
event / action / next interactive status: PROC_001
}

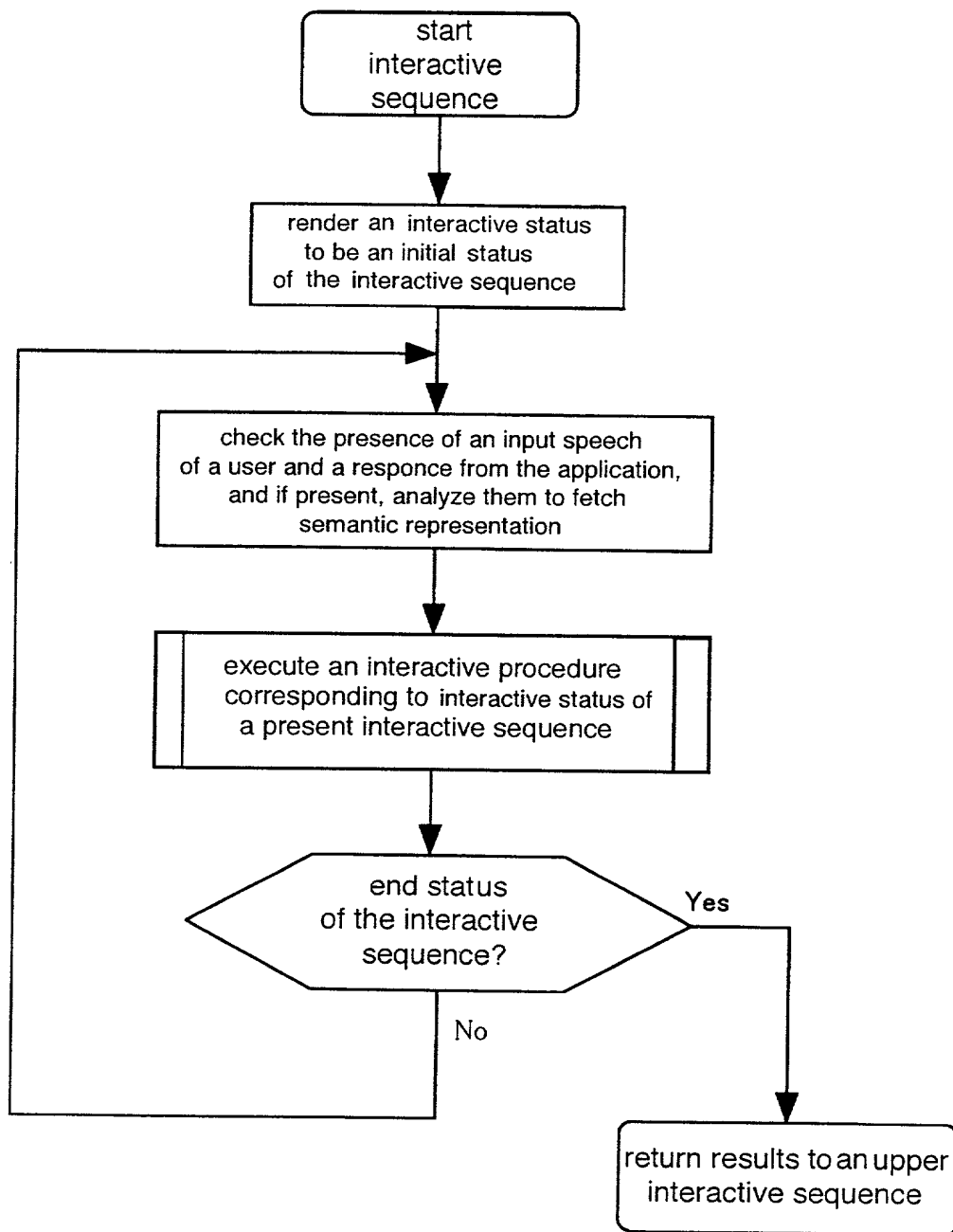
information retrieval interactive sequence
{
interactive status name: STATUS_101
event/action/next interactive status: PROC_103
interactive status name: STATUS_102
event / action / next interactive status: PROC_102
}

restaurant retrieval interactive sequence
{
interactive status name: STATUS_201
event / action / next interactive status: PROC_201
interactive status name: STATUS_202
event / action / next interactive status: PROC_202
}

upper interactive sequence is described
in normal face, and lower interactive
sequence is described in boldface.

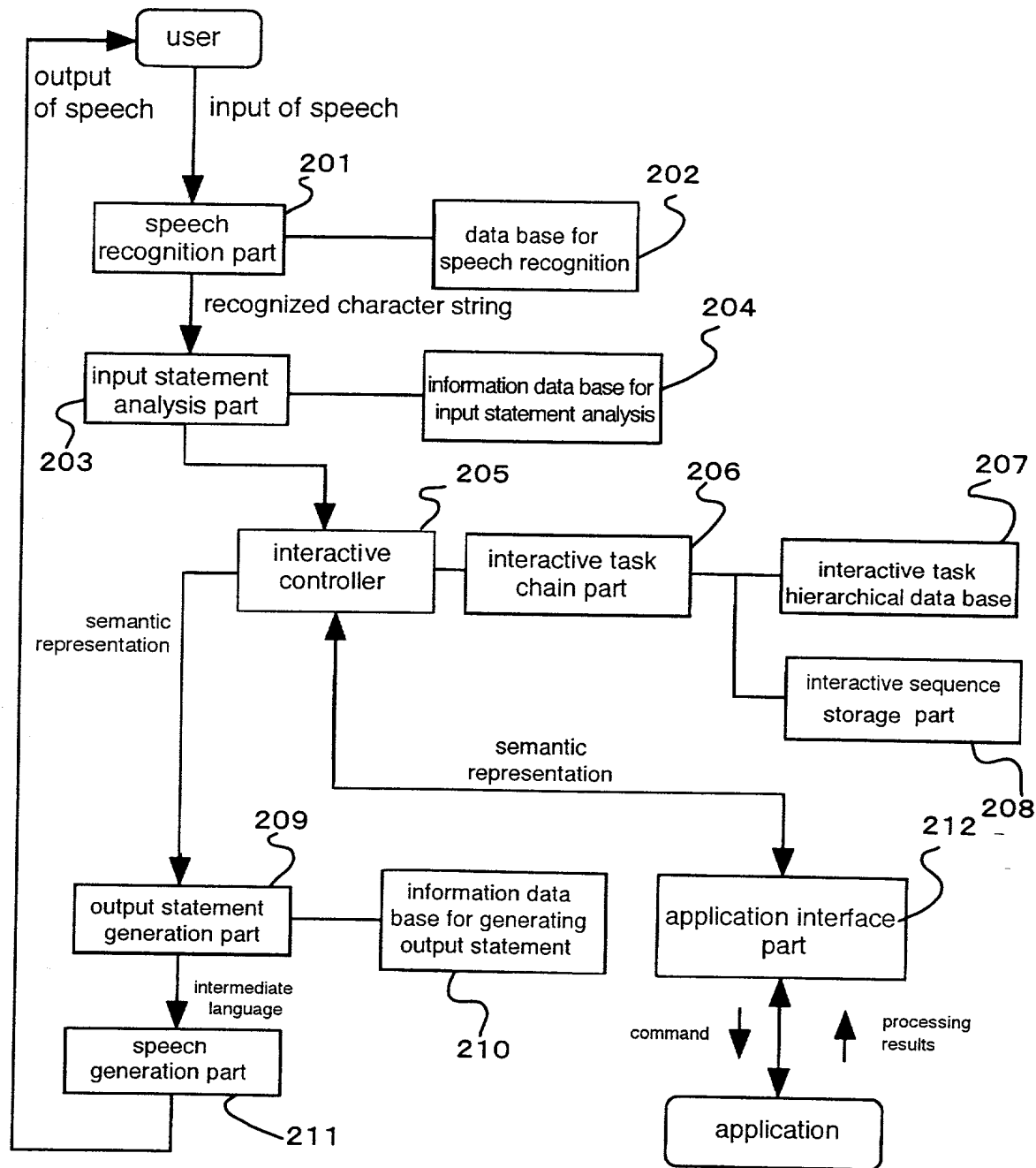
EXAMPLE OF STORAGE OF AN INTERACTIVE SEQUENCE
IN AN INTERACTIVE SEQUENCE STORAGE PART

FIG. 8



PROCESSING FLOW BY AN INTERACTIVE CONTROLLER

FIG. 9

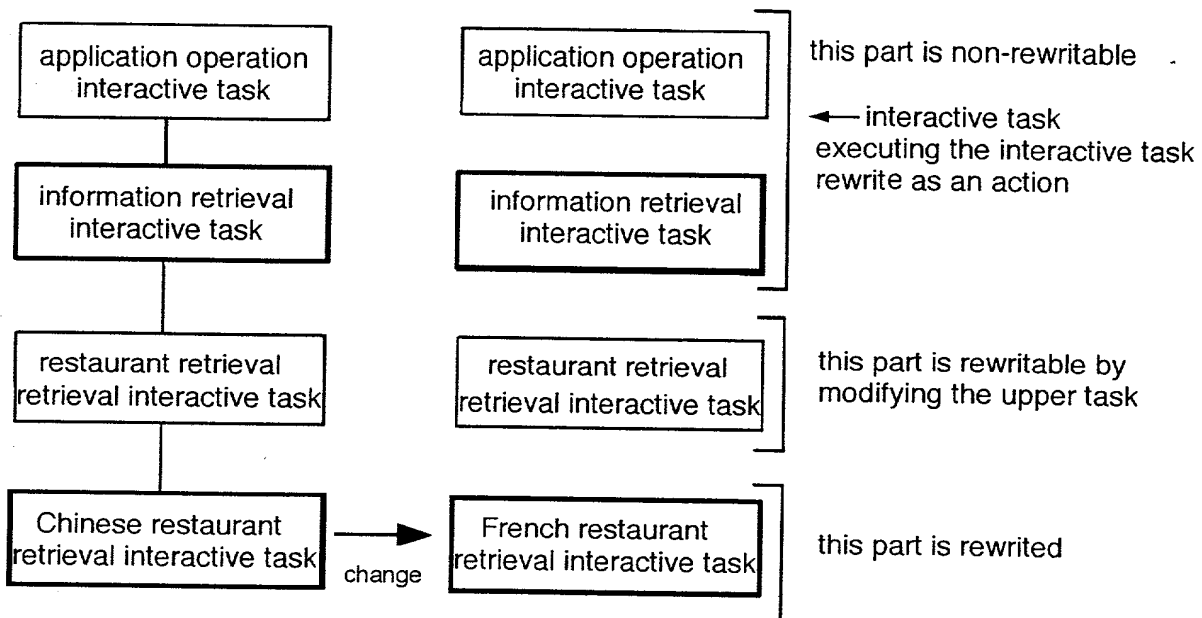


CONFIGURATION OF AN INTERACTIVE SPEECH INTERFACE UNIT

ACCORDING TO A SECOND EMBODIMENT

FIG. 10

In case of rewriting "Chinese restaurant retrieval interactive task"
to "French restaurant retrieval interactive task"
when executing "information retrieval interactive task"



EXAMPLE OF REWRITE OF AN INTERACTIVE TASK CHAIN

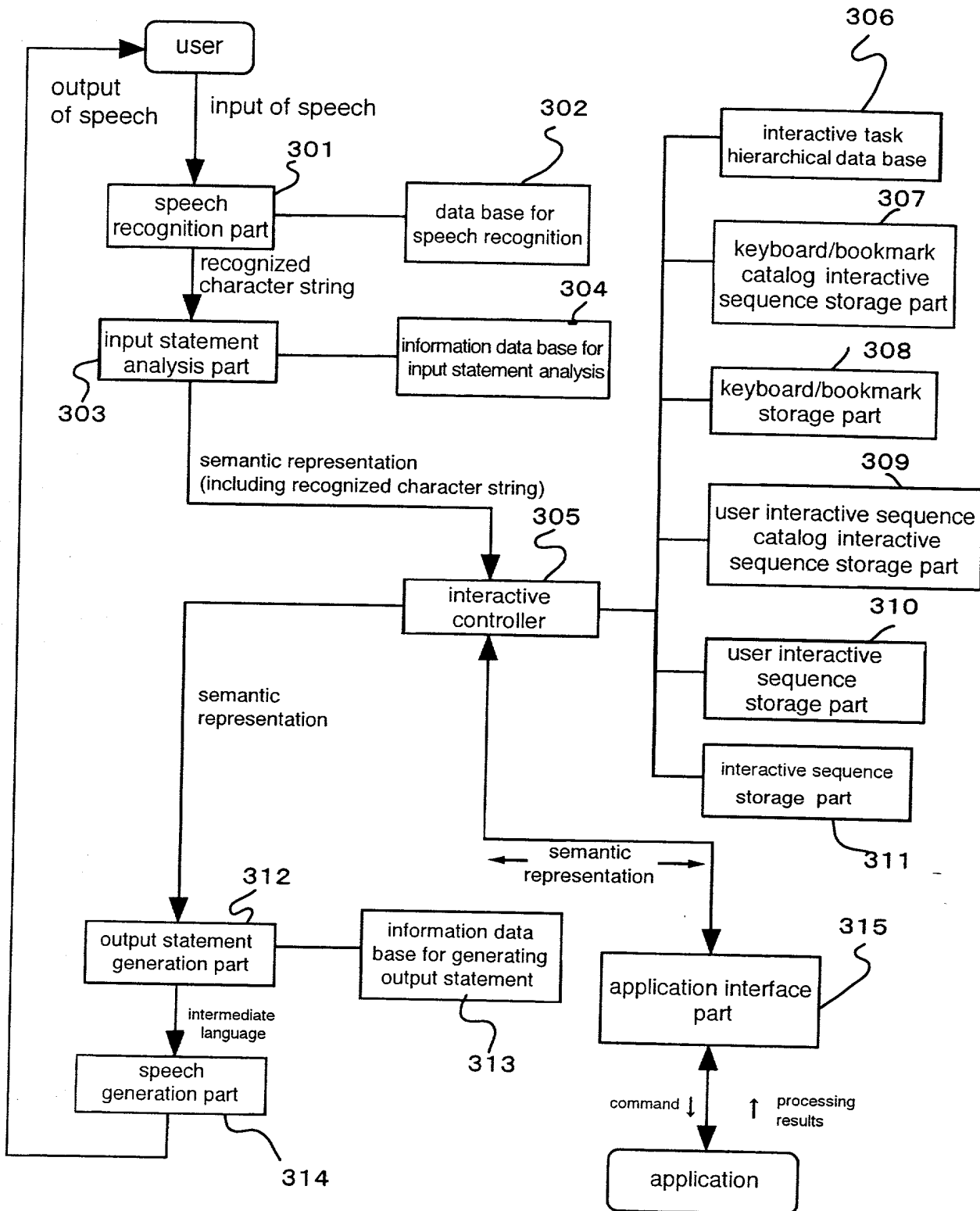
FIG. 11

```
interactive sequence name: information retrieval interactive sequence
{
  interactive status name: initial status
  interactive procedure:
  {
    action "output of [what do you retrieve?]" is executed;
    if(event "a user inputs [Chinese restaurant]" occurred){
      action "rewrite to an interactive task including Chinese restaurant" is executed;
      action "call Chinese restaurant retrieval interactive sequence" is executed;
    }
    else if (event "a user inputs [Japanese restaurant]" occurred){
      action "rewrite to an interactive task chain including Japanese restaurant" is
executed;
      action "call Japanese restaurant retrieval interactive sequence" is executed;
    }
    else if (event "a user inputs [French restaurant]" occurred){
      action "rewrite to an interactive task chain including French restaurant" is executed;
      action "call French restaurant retrieval interactive sequence" is executed;
    }
    (description of another interactive procedure)
  }

  (description of another interactive status)
}
```

EXAMPLE OF AN INTERACTIVE SEQUENCE

FIG. 12



CONFIGURATION OF AN INTERACTIVE SPEECH INTERFACE UNIT
ACCORDING TO A THIRD EMBODIMENT

FIG. 13

interactive sequence name

{

interactive status name: (describe an identifier of an interactive status)

{

interactive procedure

All sets of "event" "action" "interactive status to be transitive next" which are used in the interactive status in concern are described. For one event, describe not less than one action, one next interactive status.

Event comprises the following (1) to (5).

- (1) input statement from a user (describe in semantic representation)
- (2) results returned from a sub-interactive sequence
- (3) results returned from a calling application
- (4) decision results of various conditions (time out of a response wait from user, etc.)
- (5) a keyword in a keyword definition data base

Action comprises the following (1) to (4).

- (1) deliver output statement to user (describe in semantic representation) to output statements generation part
- (2) call sub-interactive sequence
- (3) deliver semantic representation for executing an application to an application interface sequence part
- (4) no action (perform only a status transition without doing anything)

}

(description of another interactive status)

}

CONFIGURATION OF
A USER CATALOG INTERACTIVE SEQUENCE

FIG. 14

(perform a dialog and "shift to retrieval end status")
input by user: catalog of user interactive sequence
response by system: input event name
input by user: no event
response of system: input action
input by user: no action
response of system: input next interactive status
input by user: end status
response of system: interactive sequence is cataloged

※: in a status such as the end status where the user can not actually attach a bookmark at that status, it can be used as a reserved word.

EXAMPLE (1) OF USER INTERACTIVE SEQUENCE CATALOGED DIALOG

FIG.15

```
Interactive sequence name: (omitted)
{
  interactive status name: retrieval end
  status
  interactive procedure:
  {
    action "end" is executed;
    (source interactive procedure)
  }

  (description of another interactive
  status)
}
```

INTERACTIVE SEQUENCE CATALOGED IN FIG. 14

FIG. 16

(interactive status: "retrieval end status")
 input by user: keyword catalog
 response by system: input keyword
 input by user: end
 response of system: the keyword is cataloged
 do you set another keyword?
 input by user: end of keyword setting

 (keyword setting ended)

EXAMPLE OF KEYWORD CATALOGED DIALOG

FIG. 17

(interactive status: "retrieval end status")
 input by user: bookmark catalog
 response by system: input bookmark name
 input by user: end
 response of system: the bookmark is cataloged

 (bookmark setting ended)

EXAMPLE OF BOOKMARK CATALOGED DIALOG

FIG. 18

input by user: user interactive sequence catalog
 response by system: input event name
 input by user: event specification
 response of system: please input event name
 input by user: end
 response of system: input next interactive status
 input by user: end status
 response of system: interactive sequence is cataloged

EXAMPLE (2) OF USER INTERACTIVE SEQUENCE CATALOGED DIALOG

FIG. 19

```
interactive sequence name: information retrieval interactive sequence
{
  interactive status name: retrieval end status
  interactive procedure:
  {
    if(event "keyword [end]is inputted" occurred){
      action "end" is executed
    }
    ....
  }
  (description of another interactive status)
```

INTERACTIVE SEQUENCE CATALOGED IN FIG. 18

FIG. 20

```
(system executes retrieval)
response by system: retrieval results are read out
.....
system will end
(system ended automatically)
```

DIALOG USING USER INTERACTIVE SEQUENCE IN FIG. 15

FIG.21

```
(system executes retrieval)
response by system: retrieval results are read out
.....
input by user: end
response by system: system will end

(system ended automatically)
```

DIALOG USING USER INTERACTIVE SEQUENCE IN FIG. 19

FIG. 22

PRIOR ART

input by user: I want to retrieve.
response by system: What do you want to retrieve?
input by user: Chinese restaurant.
response by system: Which area do you want to retrieve?
input by user: Shinjuku.
(system executes information retrieval)
response by system: 62 cases match your inquiry.
response by system: What do you want to do?
input by user: At east entrance.
response by system: 4 cases match your inquiry
May I read out?
input by user: read out names and places
response by system: Rairai-ken, Shinjuku 1-chome, ... (omitted)

EXAMPLE OF APPLICATION OPERATION ACCORDING TO A
CONVENTIONAL INTERACTIVE SPEECH

FIG. 23

PRIOR ART

EXAMPLE OF CONVENTIONAL AN INTERACTIVE SEQUENCE

